MILITARY SPECIFICATION SHEET

RELAYS, ELECTROMAGNETIC, ESTABLISHED RELIABILITY, 6PDT, LOW LEVEL TO 10 AMPERES, PERMANENT MAGNET DRIVE, HERMETICALLY SEALED, ALL WELDED, AC COIL

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specifications and Standards (DODISS) specified in the solicitation: MIL-R-83536.

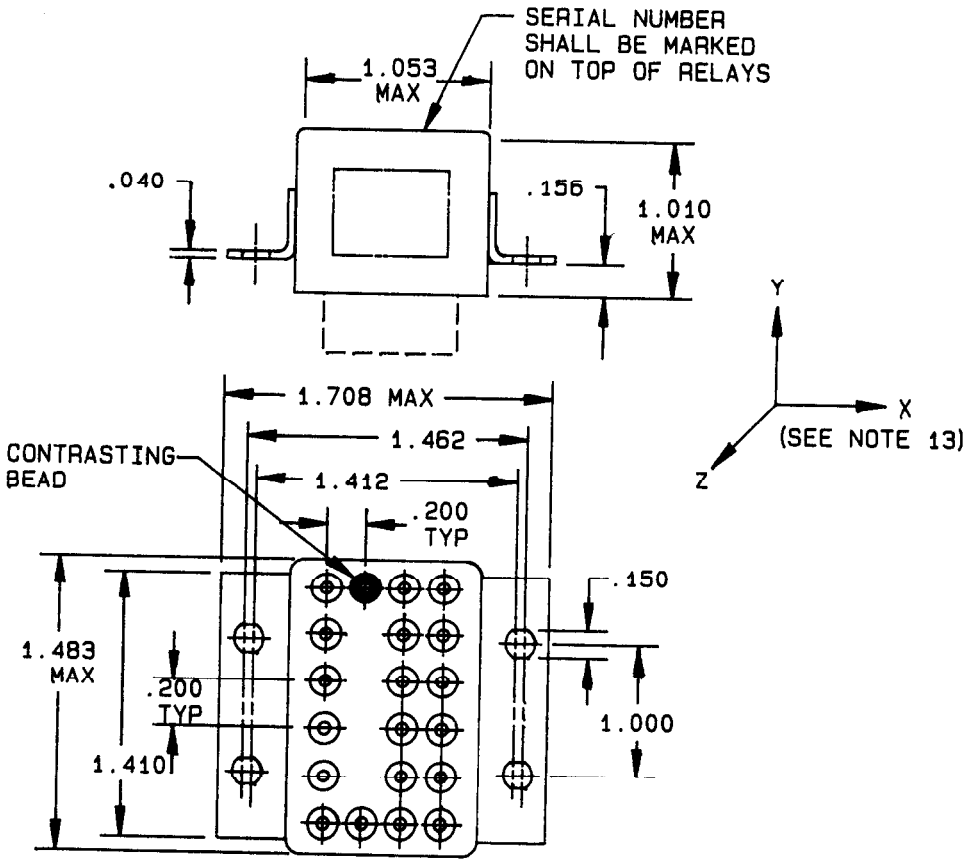
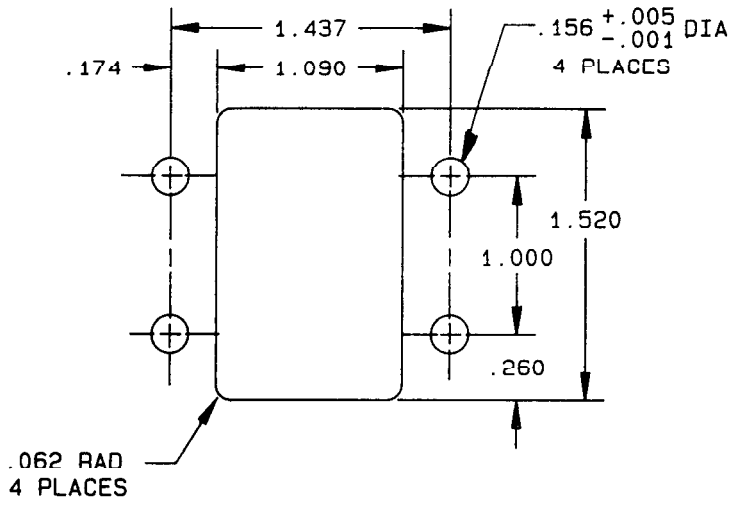
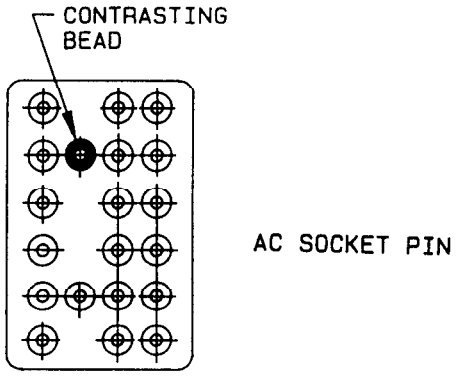


FIGURE 1. Dimensions and configurations.



MOUNTING HOLE LAYOUT



TERMINAL LAYOUT FOR SOCKET PIN RELAYS

FIGURE 1. Dimensions and configurations - Continued.

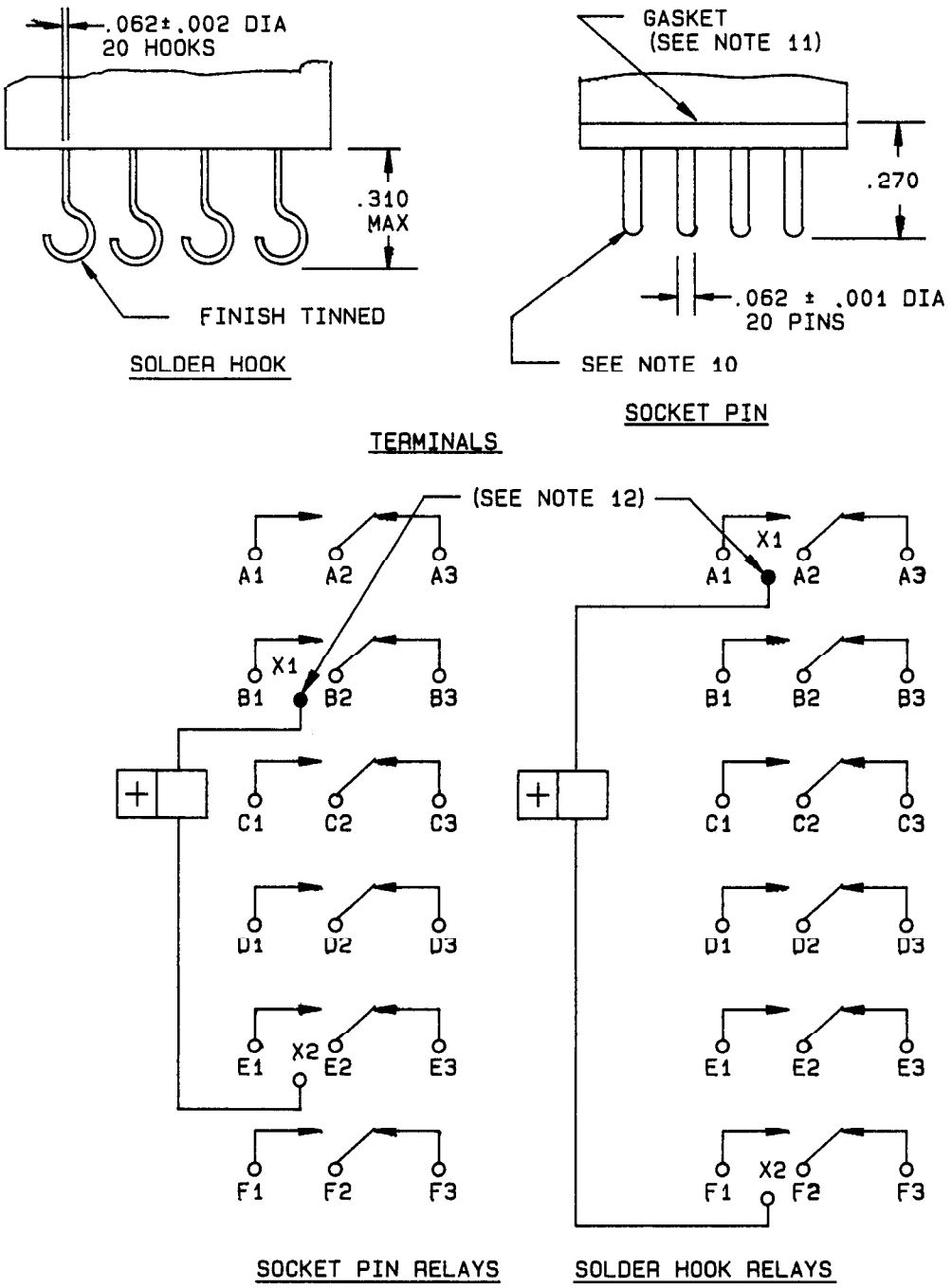


FIGURE 1. Dimensions and configurations - Continued.

Inches	mm	Inches	mm
.001	0.03	1.000	25.40
.002	0.05	1.010	25.65
.005	0.13	1.053	26.75
.040	1.02	1.090	27.69
.062	1.57	1.410	35.81
.150	3.81	1.412	35.86
.156	3.96	1.437	36.50
.174	4.42	1.462	37.13
.200	5.08	1.483	37.67
.260	6.60	1.520	38.61
.270	6.86	1.708	43.38
.310	7.87		

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerance is ±.010 (0.25 mm).
4. There shall be affixed to the relay a suitable legible circuit diagram that identifies each terminal location specified.
5. These relays are polarized monostable.
6. This relay shall not operate or be damaged by reverse polarity.
7. Permanent magnet drive consists of a permanent magnet with its flux path switched and combined with the electro-magnet flux.
8. Applicable to horizontal flange mount only. The circuit diagram, manufacturer's PIN, and the military PIN shall be marked on the near side. The remaining portion of the nameplate data shall be marked on the far side.
9. Applicable to horizontal flange mount only. Relays shall be marked with the manufacturer's name or CAGE code and date code. Marking shall be with the bottom of the print adjacent to the near side.
10. Socket pin terminals shall be gold-plated in accordance with MIL-G-45204, type II, class I. The nickel underplating shall be 50 to 150 microinches thick minimum.
11. Silicone rubber gasket, AMS 3332, shore hardness 15 to 35, thickness .050 ±.005 (1.27 ±0.13 mm).
12. Indicated terminals shall be identified by contrasting beads.
13. Plane of critical motion for vibration and shock is Y-axis.

FIGURE 1. Dimensions and configurations - Continued.

REQUIREMENTS:

Contact data:

Load ratings: See table I.

Low level: 10 to 50 μA at 10 to 50 mV dc or peak ac.

Intermediate current: Applicable.

Mixed loads: Applicable.

TABLE I. Rated contact load and cycles (amperes per pole).

Type of load (high level)	Cycles x 10^3	28 V dc	115 V ac 1 phase 400 Hz	115 V ac 1 phase 50/60 Hz 1/	115/200 V ac 3 phase 400 Hz	115/200 V ac 3 phase 50/60 Hz 1/
Resistive	100	10	10	2.5	10	2.5
Inductive	20	8	8	2.5	8	2.5
Motor	100	4	4	2.0	4	2.0
Lamp	100	2	2	1.0	N/A	N/A

1/ For 50/60 Hz rating, rupture and overload are not applicable and life for each load shall be 10,000 cycles.

Life: 100,000 cycles, unless otherwise specified (see table I).

Contact voltage drop or resistance:

High level:

Initial: 0.100 ohm maximum.

During life: 5 percent open circuit voltage maximum.

After life: 0.125 volt maximum.

Intermediate current:

Initial: 0.100 ohm maximum.

During intermediate current: 3 ohms maximum.

Low level:

Initial: 0.050 ohm maximum.

During low level: 33 ohms maximum.

After low level: 0.125 ohm maximum.

Contact bounce: 1.0 millisecond maximum.

Contact stabilization time: 2.5 milliseconds maximum.

Overload current: 40 amperes dc, 60 amperes ac.

Rupture current: 50 amperes dc, 80 amperes ac.

Time current relay characteristics: See table II.

TABLE II. Time current relay characteristics. 1/

Successive application	Amperes	Time
1	15	1 hour
2	50	5.0 seconds
3	100	1.2 seconds
4	250	0.2 second
5	350	0.1 second

1/ All relays shall withstand overload and fault currents. Relays must be able to sustain five applications (make and carry only) of power concurrently on adjacent poles at each of five different current levels in the sequence listed in table II. Separate relays shall be tested at 28 V dc and 115/200 V ac, 400 Hz 3-phase. Cooling time between successive applications shall be 30 minutes. Tests shall be performed on both normally open and normally closed contacts. There shall be no failures or evidence of welding or sticking and relays shall pass contact voltage drop at the conclusion.

Coil data 1/: See table III.

Operate time: 20 milliseconds maximum with rated coil voltage over the temperature range.

Release time: 50 milliseconds maximum from rated coil voltage over the temperature range.

Duty rating: Continuous.

Coil transient suppression: Not applicable.

Neutral screen: Not applicable.

Electrical data:

Insulation resistance:

Initial: 100 megohms minimum at 500 V dc.

After life or environmental tests: 50 megohms at 500 V dc.

1/ CAUTION: Due to possible interaction of relay magnetic fields, the following spacing requirements, as a minimum, shall be considered in dense packaging situations:

a. Row to row assisting fields: .125 (3.18 mm).

b. Row to row opposing fields: .1875 (4.763 mm).

c. Side to side alternating fields: .0625 (1.588 mm).

d. Side to side like fields: .125 (3.18 mm).

TABLE III. Dash numbers and characteristics. 1/

Dash number 2/		Mount	Coil data												
			At 25°C							Over temperature range			Maximum pickup voltage	
Solder hook	Socket pin		Coil voltage (V dc) 3/		Frequency (Hz)	Coil current (amperes) minimum	Specified pickup voltage (V ac) 4/	Specified hold voltage (V ac) 4/	Specified dropout voltage (V ac) 4/	Specified pickup voltage (V ac) 4/	Specified hold voltage (V ac) 4/	Specified dropout voltage (V ac) 4/	High temperature test	Continuous current test
			Rated	Max										
001	002	RVFM	115	122	400	.06	72	22	7.5	90	30	5.0	95.4	105

1/ Each relay possesses high level and low level capabilities. However, relays previously tested or used above 10 mA resistive at 6 V dc maximum or peak ac open circuits are not recommended for subsequent use in low level applications.
2/ The suffix letter L, M, P, or R to designate the applicable failure rate level shall be added to the applicable listed dash number. Failure rate level (percent per 10,000 cycles): L, 3.0; M, 1.0; P, 0.1; R, 0.01. Example: 001L, 002R.
3/ CAUTION: The use of any coil voltages less than the rated coil voltage will compromise the operation of the relay.
4/ Pickup, hold, and dropout voltages as shown are for test purposes only and are not to be used for design criteria.

Dielectric withstanding voltage 2/:

Sea level:	Coil to case	All other points
Initial:	1,000	1,250
After life:	1,000	1,000
Altitude:		
At 80,000 feet:	350	350
At 300,000 feet:	500	500

Environmental characteristics:

Temperature range: -70°C to +125°C.

Maximum altitude rating: 300,000 feet.

Shock (specified pulse): Applicable, MIL-STD-202, method 213, test condition C, except peak value shall be 50 g's for 6 to 9 ms. Contact chatter shall not exceed 10 microseconds maximum for closed contacts and 1 microsecond maximum closure for open contacts.

Vibration (sinusoidal): Applicable, MIL-STD-202, method 204, 20 g's except frequency range shall be 10 to 2,000 Hz. Contact chatter shall not exceed 10 microseconds maximum for closed contacts and 1 microsecond maximum closure for open contacts.

Vibration (random): Applicable to qualification and group C inspection. Test in accordance with MIL-STD-202, method 214, test condition IF (0.3 g^2/Hz, 50 to 2000 Hz), 15 minutes each plane. Contact chatter shall not exceed 10 microseconds maximum for closed contacts and 1 microsecond maximum closure for open contacts.

Acceleration: Applicable, except 15 g's.

Physical data:

Dimensions and configurations: See figure 1.

Weight: 0.26 pound (117.94 g's).

Terminal strength:

Solder hook terminals:

Pull force: 10 pounds ±1.0 pound.

Bend: Applicable.

Twist: Not applicable.

Socket pin terminals:

Pull force: For .062 diameter terminals: 10 pounds ±1.0 pound.

Bend: Applicable.

Twist: Not applicable.

2/ Dielectric may be improved by suitable insulation of terminals and wiring after installation.

Terminal solderability: Applicable to solder hook terminals only.

Seal: Hermetic.

Marking: Applicable.

Part or Identifying Number (PIN): M83536/27 (dash number from table I and suffix letter designating failure rate level). PIN is a new term encompassing previous terms used in specifications such as part number, type designator, and identification number.

Qualification inspection:

Qualification inspection and sample size: See table IV.

TABLE IV. Qualification inspection and sample size.

Single submission	Group submission	
18 units plus 1 open unit for level L at C = 0 1/	M83536/27-001	18 units plus 1 open unit for level L at C = 0 1/
33 units plus 1 open unit for level M at C = 0 1/	"	33 units plus 1 open unit for level M at C = 0 1/
Qualification inspection as applicable	"	Qualification inspection as applicable
	M83536/27-002	2 units, qualification inspection table, group II, shock, vibration, acceleration, terminal strength, and seal
		2 units, qualification inspection table, group II

1/ The number of units required for qualification testing shall be increased as required in group V, table II of MIL-R-83536, if the contractor elects to test the number of units permitting one or more failures. Prior to performance of qualification testing, the relay manufacturer shall preselect the sampling plan.

Supersession data: See table V.

TABLE V. Supersession data.

Superseded PIN M6106/8-	Replacement PIN M83536/27-
003	001
004	002
007	001
008	002

CONCLUDING MATERIAL

Custodians:
Army - ER
Navy - EC
Air Force - 85

Review activities:
Air Force - 99
DLA - ES

Preparing activity:
Air Force - 85

Agent:
DLA - ES

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